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# Principles Of Cookery

## FOOD FOR YOUNG FAMILIES



■ Some foods are good to eat raw, but when you cook them you want them to:

- Taste good
- Retain food value
- Give variety to meals.

Preparing food is more interesting when you understand:

- What cooking does to it
- Why these changes take place.

Each group of foods has its own chemical and physical properties which determine the best method of preparation. These so-called "secrets" of good cooking have been discovered through years of experimenting with food. All foods contain certain nutrients. Your job as homemaker is to prepare food so that:

- Your family enjoys eating it
- It looks attractive
- It provides the food nutrients they need.

Consider some of the food preparation methods which help retain the greatest food value, flavor, and attractiveness. This will help you prepare foods the way you want them.

### **Preparing Meat and Eggs**

Protein is an important component of all meats, eggs, milk, and cheese. It coagulates or becomes firm when heated. When subjected to very high heat, coagulation occurs rapidly and overcooking may result, leaving a tough, unpalatable product; for example—an egg that has boiled instead of simmered. Tough and dry meat is often the result of efforts to speed cooking by using high temperatures.

Most people prefer meat tender, juicy, and flavorful. With tenderness a prime considera-

tion, meats are usually classed in two groups: tender and less tender. There are two principal components of meat which affect tenderness: muscle fibers and connective tissue. The muscle fibers are held together by the connective tissue. Tender cuts have less connective tissue than do the less-tender cuts. The amount of connective tissue largely determines the cooking method.

Cuts of meat differ in tenderness according to the part of the animal from which they are taken, and the age and fatness of the animal. Cuts differ also in the amount of bone and gristle they contain and in the direction the muscles run.

The tender cuts of beef, as a rule, come from the rib and loin. They make up about one-fourth of the carcass. The other three-fourths are less tender, and so may be less expensive.

**TENDER CUTS**, usually most expensive, are best cooked with dry heat—by broiling, roasting, panbroiling, or panfrying. Because dry heat does not soften connective tissue, only tender cuts containing small amounts can be cooked successfully in this way. Even then, the meat may become hard and dry when cooked too long at too high a temperature.

**Tender roasts**, such as rib or sirloin, are best cooked at low to moderate temperature (300°-350° F.) in an uncovered pan. Use a meat thermometer to be sure the meat is cooked to the right degree of doneness. Rare meat is juicier and shrinks less than medium or well-done.

**Tender steaks**, such as sirloin, tenderloin, club, porterhouse, may be broiled, panbroiled, or panfried, with very little fat.

**Ground beef** is tenderized by cutting the connective tissue. One-fourth cup liquid, such as



milk or tomato juice, added to each pound of ground meat helps make a softer, more moist product.

**Most lamb cuts** are tender enough to be roasted, broiled, or cooked without added moisture.

**LESS TENDER CUTS** can be prepared to be just as tasty and nutritious as the tender ones. Successful cooking of less tender cuts usually requires an hour or more in moist heat at low temperature to soften the connective tissue. Simmering temperature ( $185^{\circ}$ - $210^{\circ}$  F.) is best. Overcooking, however, may cause the muscle fibers to become hard and dry.

Pot roasts, such as chuck, rump, arm or blade roast, are often better when cooked by moist heat. Add water, tomato juice, or other liquid, cover pan, and simmer until tender. These cuts require slow cooking with moisture to soften the connective tissue. Pot roast also may be cooked slowly in a covered pan with no added liquid—the meat will provide the moisture needed. Some pot roasts from high-grade carcasses (U.S. Prime or U.S. Choice) may be roasted in a  $300^{\circ}$ - $350^{\circ}$  F. oven satisfactorily.

**Steaks**, such as most round, flank, or thin shoulder, need moisture and a covered pan. Swiss steak with tomatoes is an example of this cooking method.

**Pork.** Most cuts of pork are tender enough to be roasted. Pork chops and steaks may be pan-fried or braised (cooked in moist heat). Pork should be thoroughly cooked until no pink color remains in the meat ( $185^{\circ}$  F. in center) to develop flavor.

**Veal** contains little fat and large amounts of connective tissue and requires slow cooking to well-done stage to develop flavor and to soften the connective tissue. Large, meaty cuts may be

roasted; other cuts are best braised or simmered.

**Frozen meat** may be thawed before cooking or cooked without thawing. Meat cooked from frozen state requires about 1½ times as long as fresh or thawed meat.

**TENDERIZERS** soften the connective tissues and speed up tenderization of meat. Tenderizers are harmless enzymes, and commercial preparations usually contain a mixture of enzymes. Most of their tenderizing action occurs while you are preparing meat for cooking and during the early stages of cooking.

Cooking with liquids such as tomato juice, fruit juice, vinegar, or water helps tenderize the connective tissues.

### **Fruits and Vegetables**

Green, golden, red, or white vegetables and fruits offer interesting color variety along with their valuable vitamins and minerals. The skill of a good cook lies in preparing these foods so they retain the flavor, color, and food value. Since many fruits and vegetables are good raw, first consider serving them as salads, relishes, or desserts.

Proper storage of fresh items helps conserve their original food values. The length of time raw vegetables are stored, as well as storage temperature and humidity, affects retention of their nutrients. Vegetables such as kale, spinach, broccoli, turnip greens, chard, and salad greens need to be refrigerated promptly in the vegetable crisper or in moisture-proof bags. They keep their nutrients best at near-freezing temperatures and at high humidity. (See references for more information on storing and preparing fruits and vegetables.)

Vegetables are often overcooked. For best color, texture, flavor, and food value, cook them

the shortest time possible to make them palatable.

In cooking vegetables and fruits, losses of nutrients are caused by air, heat, and water.

- **Air**—keep most foods covered, to prevent loss from oxidation.

- **Heat**—some nutrients, especially vitamin C, are destroyed by heat. Cook foods the shortest length of time possible to make them palatable and attractive.

- **Water**—minerals and some vitamins are dissolved in water. Generally use the smallest amount of water possible to cook food to the desired stage.

Interesting changes take place when a fruit or vegetable is cooked. Green vegetables, when overcooked, lose the bright green color of the chlorophyll. The shorter the cooking time, the more the color is retained. Frozen vegetables are partially cooked during the blanching process before freezing. Therefore, frozen vegetables require less cooking time than raw. Blanching and hard water help keep the green color of vegetables.

Red vegetables retain color better when acid, such as vinegar, is added. When peeled or cut, raw apples and other light-colored fruits turn dark from oxidation (exposure to air). By dropping them into salt water, adding lemon juice, ascorbic or other acids, darkening can be prevented. Cooking also prevents color change.

For high-altitude cooking, pressure sauce pans are excellent for certain vegetables such as dry beans. Accurate timing is necessary to prevent overcooking.

### **Milk and Milk Products**

There is little in the preparation of milk that affects its food value. Take care to use low

heat because it scorches easily. Low, controlled heat or a double boiler is recommended for cooking milk products.

Many homemakers have the problem of using enough milk to supply the needs of each member of the family.

You may add dry milk in varying amounts to the dry ingredients of many baked products to increase the food value without harm to the taste or eating quality. This method of supplementing fresh milk helps many people get a better supply of calcium and riboflavin. Recipes have been specially developed to use several times the usual amounts of milk solids.

Cheese, like most protein foods, should be heated at a low temperature to prevent it from getting stringy or tough. Processed cheese softens more easily because of an emulsifying agent which has been added.

## Breads and Cereals

Most people include some bread or cereal in every meal, but modern food processing and bakeries have taken over much of the home preparation of these foods. Cereals, such as quick oats and rice, are often partially cooked to save the homemaker preparation time.

Breads are classed as quick or yeast breads, depending on the type of leavening used. Quick breads use baking powder, soda, or both to form carbon dioxide gas. The gluten in flour, which is developed by kneading, stretches when the gases in the leavening agent expand. Yeast, another type of leavening agent, is a delicate, living plant. When warm, it grows after moisture, flour, and sugar are added.

When dry heat is applied to starch foods, the starch is changed into simpler substances called dextrines. They are slightly sweet, brownish in color, and slightly soluble in water. Dry heat produces other changes in starch. At 127° F. it begins to brown. This happens when flour is browned for sauces, when bread is

toasted, or when brown crust is formed on bread and cake during baking. If baked products are put in a very hot oven, the structure (protein in nature) may form before the carbon dioxide gas has been released. This leaves a flat, tough product with poor texture.

Moist heat makes starch grains take up water and swell, which gives starch its thickening power. Starchy mixtures should be heated long enough to insure maximum swelling. Prolonged boiling may cause starch paste to become thin, because some of the starch is converted into simple sugars. In presence of an acid, such as lemon juice or vinegar, this conversion is more rapid.

When you thicken liquids with starch, separate the starch grains before heating by mixing with cold liquid, creamed or melted fat, or sugar. Otherwise lumps of uncooked starch may be formed.

## Additional Reading

The following can be ordered from Office of Information, U. S. Department of Agriculture, Washington, D. C. Other bulletins may also be obtained by writing for the list of "Popular Publications."

1. *Family Fare, Food Management and Recipes*, G 1.
2. *Conserving the Nutritive Values in Foods*, G 90.
3. *Storing Perishable Foods in the Home*, G 78.
4. *Green Vegetables for Good Eating*, G 41.
5. *Dry Beans, Peas, Lentils*, Leaflet 326.
6. *Getting Enough Milk*, G 57.

The following can be ordered from the address listed:

1. *Yearbooks of Agriculture: 1959, 1965*, Superintendent of Documents, Government Printing Office, Washington, D. C. 20402
2. *Lessons on Meat*, National Live Stock and Meat Board, 407 South Dearborn Street, Chicago, Ill. \$0.50.
3. *Our Daily Bread and Treasury of Yeast Baking*, National 4-H Service Committee, Inc., 59 East Van Buren Street, Chicago, Ill.

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